#44

Late Backup

Resource & Climate Protection Plan to 2020

Recommendations, Plan and Update

Austin Energy

Roger Duncan, General Manager

January 28, 2010

Resource & Climate Protection Plan to 2020

AGENDA

Agenda

- Austin Energy Mission Statement
- Austin Climate Protection Plan
- Public Participation Process
- Staff Recommendation
- Other Scenarios
- Generation Task Force Recommendation
- Staff Response

Mission Statement

To deliver clean, affordable,
reliable energy and
excellent customer service.

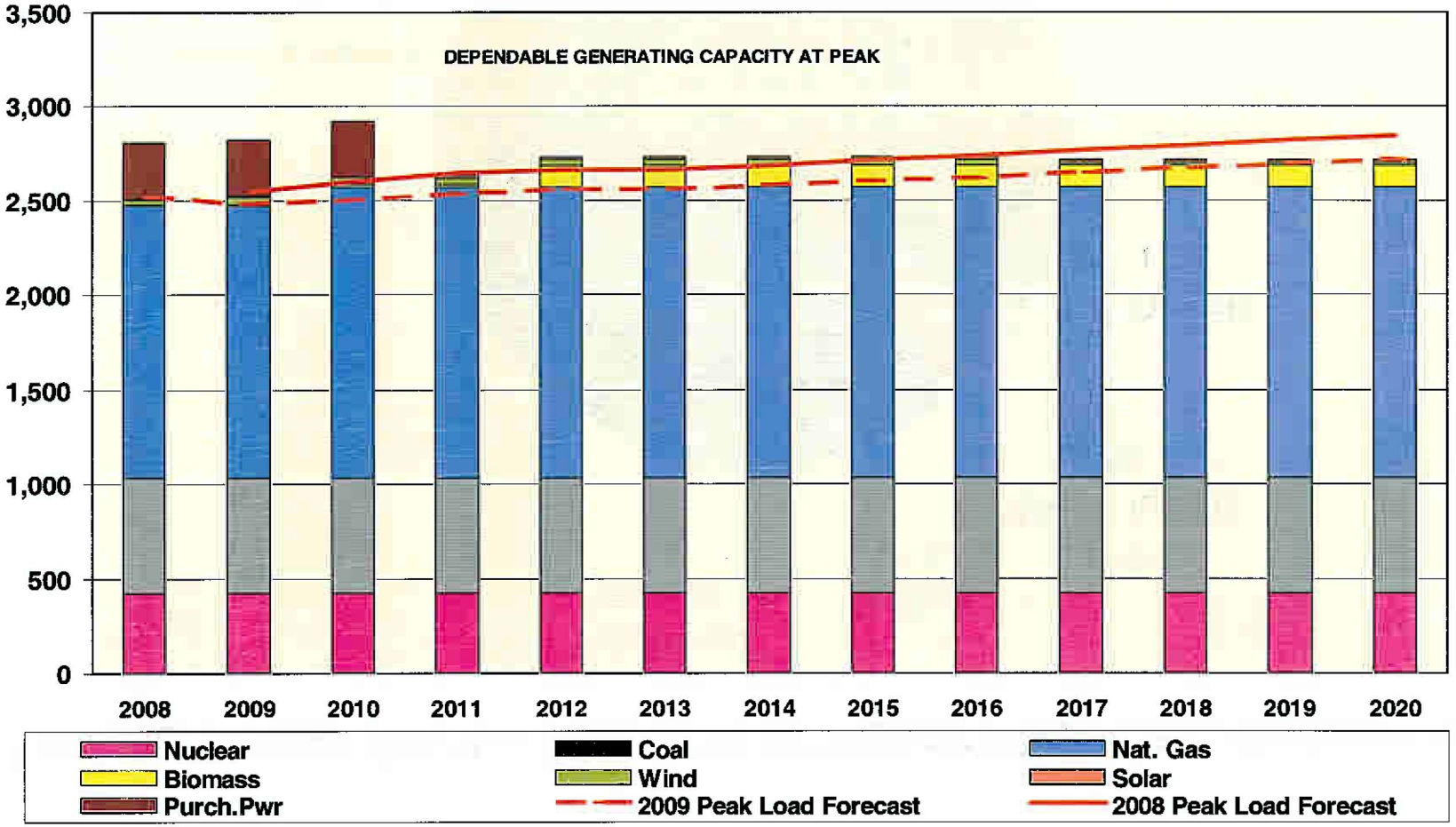
Austin Climate Protection Plan (2007)

- Establish a CO_2 cap and reduction plan for all utility emissions
- "Make Austin Energy the leading utility in the nation for greenhouse gas reductions"
- 30% Renewable Energy by 2020
- 100 MW Solar by 2020
- 700 MW Energy Conservation by 2020

Key Planning Requirements

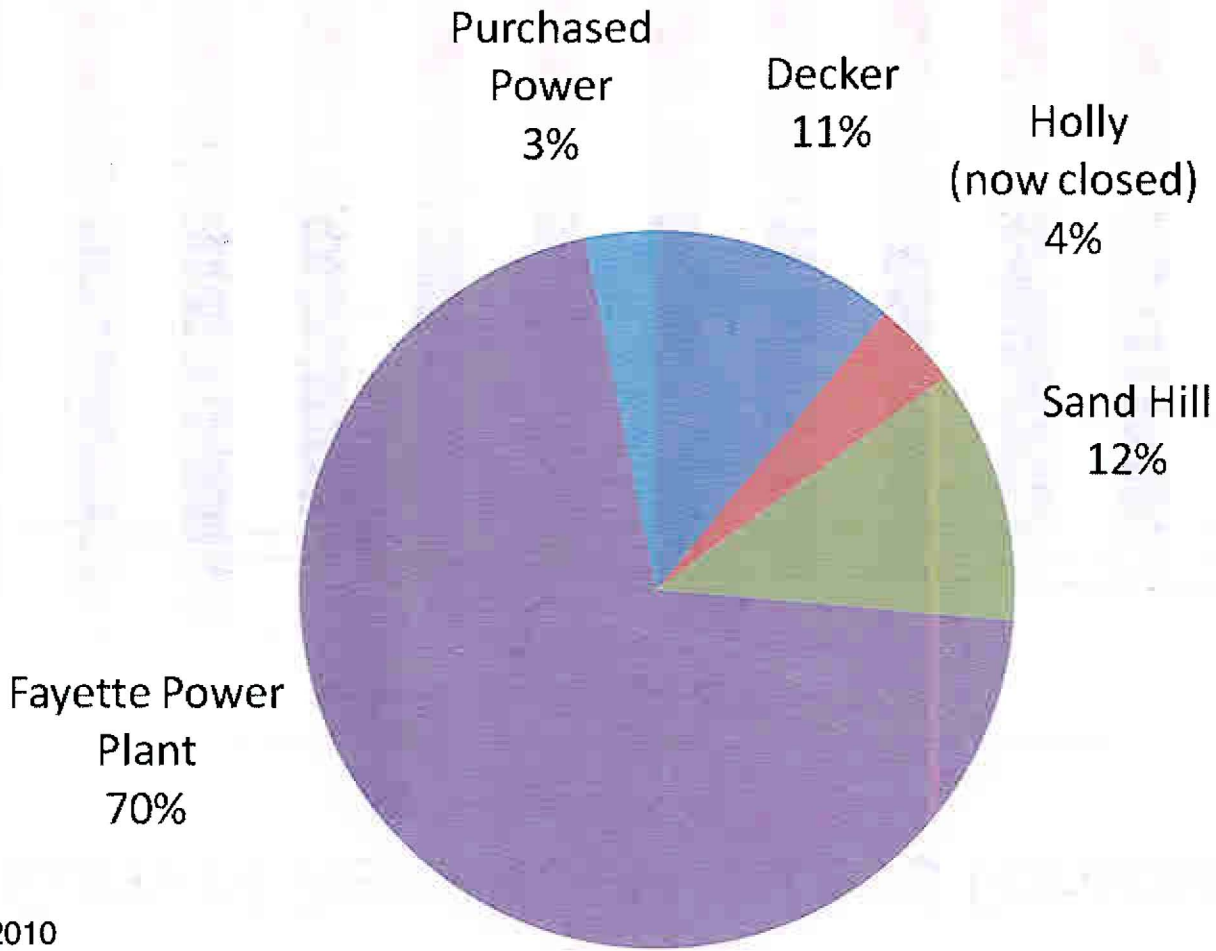
- Reliably meet demand and energy requirements
- Meet Council goals
  - 30% renewables by 2020
  - 100 MW solar by 2020
  - 700 MW efficiency by 2020
- Execute existing generation contracts (solar & biomass)
- No retirement of existing power plants before 2020

Current Resources vs. Load Forecasts



Austin Energy CO_2 Emissions Profile, 2007

Fayette Power Plant = Nearly ¾ of Power Plant CO_2 Emissions



Resource & Climate Protection Plan to 2020

PUBLIC PARTICIPATION PROCESS

Public Participation Process

- Ten Town Hall Meetings held in Austin Energy's service territory from October 2008 through September 2009
- One-on-one meetings with 30 stakeholders occurred in parallel with Town Hall meetings
- Four employee Town Hall meetings held
- Fourteen Stakeholder Meetings reached approximately 600 stakeholders
- **AustinSmartEnergy.com** website hits: over 570,000
- Surveys submitted: 1,016
- Launched "Change Your Generation" online energy game

Publicly Stated Preferences

- Broad support for efficiency
- More solar
- More wind
- Less coal
- Split on nuclear
- Strong appetite for information on costs

Citizens' Priorities

- Costs
- Across-the-board support for energy efficiency
- Environmental groups say this is the time to stop using coal
- Transparency is strongly desired, and sometimes hard to satisfy
- Continuing opportunities to participate in the process

Resource & Climate Protection Plan to 2020

AUSTIN ENERGY'S RECOMMENDATION

January 28, 2010

Austin Energy Recommendation

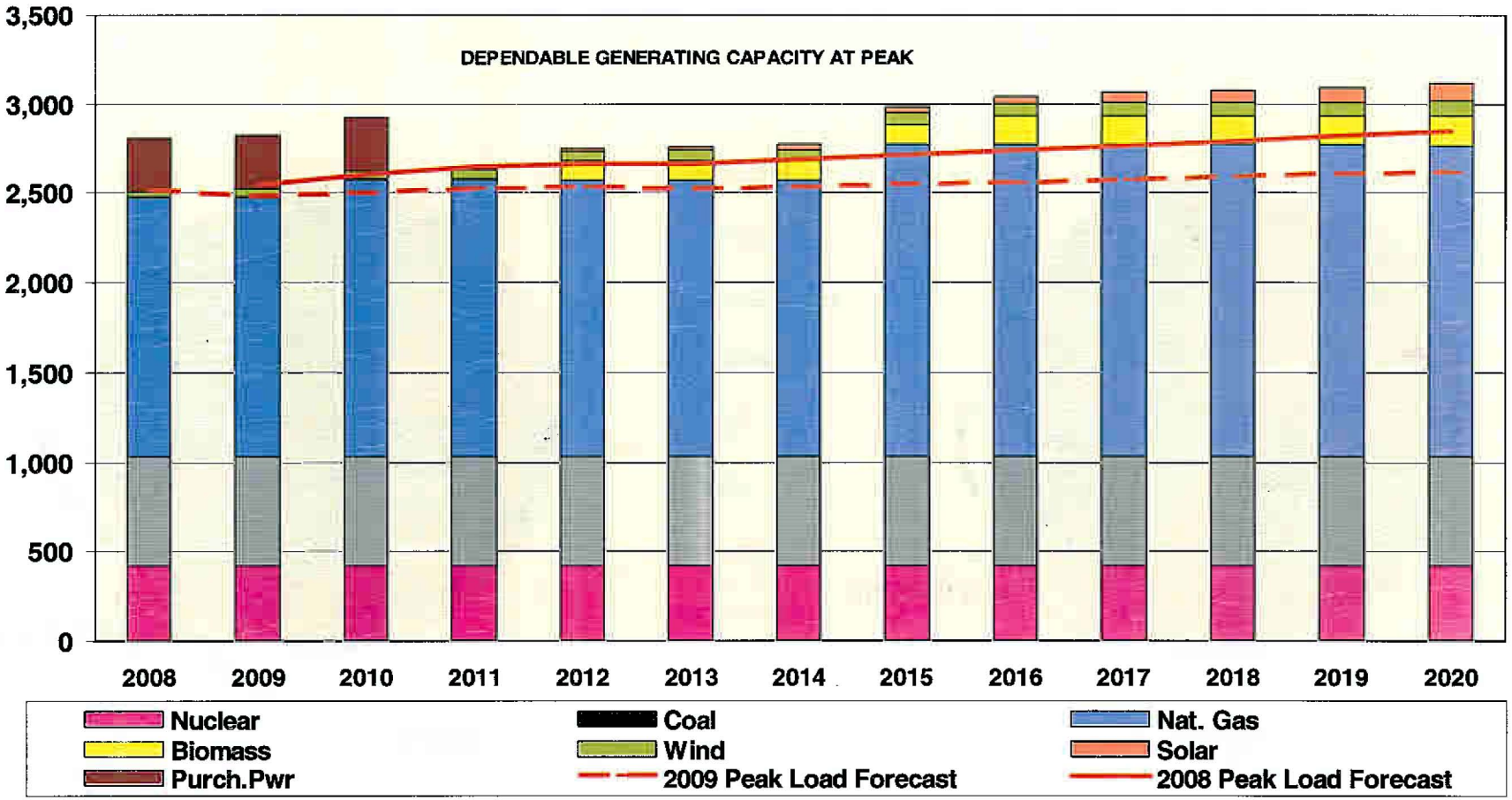
Generation Resources in MW

Year	Coal/Nuclear	Gas	Biomass	Wind	Solar	Renewable Portfolio
2009	1,029	1,444	12	439	1	12.6%
2010		100			30	12.5%
2011				(77)*/ 200		17.7%
2012			100			22.2%
2013				150		26.2%
2014					30	26.4%
2015		200		100		28.7%
2016			50		20	31.6%
2017				(126)*/ 200	30	35.0%
2018					20	33.6%
2019					30	33.7%
2020				115	40	36.7%
Total	**1,029**	**1,744**	**162**	**1001**	**201**	

* Wind contracts expire.

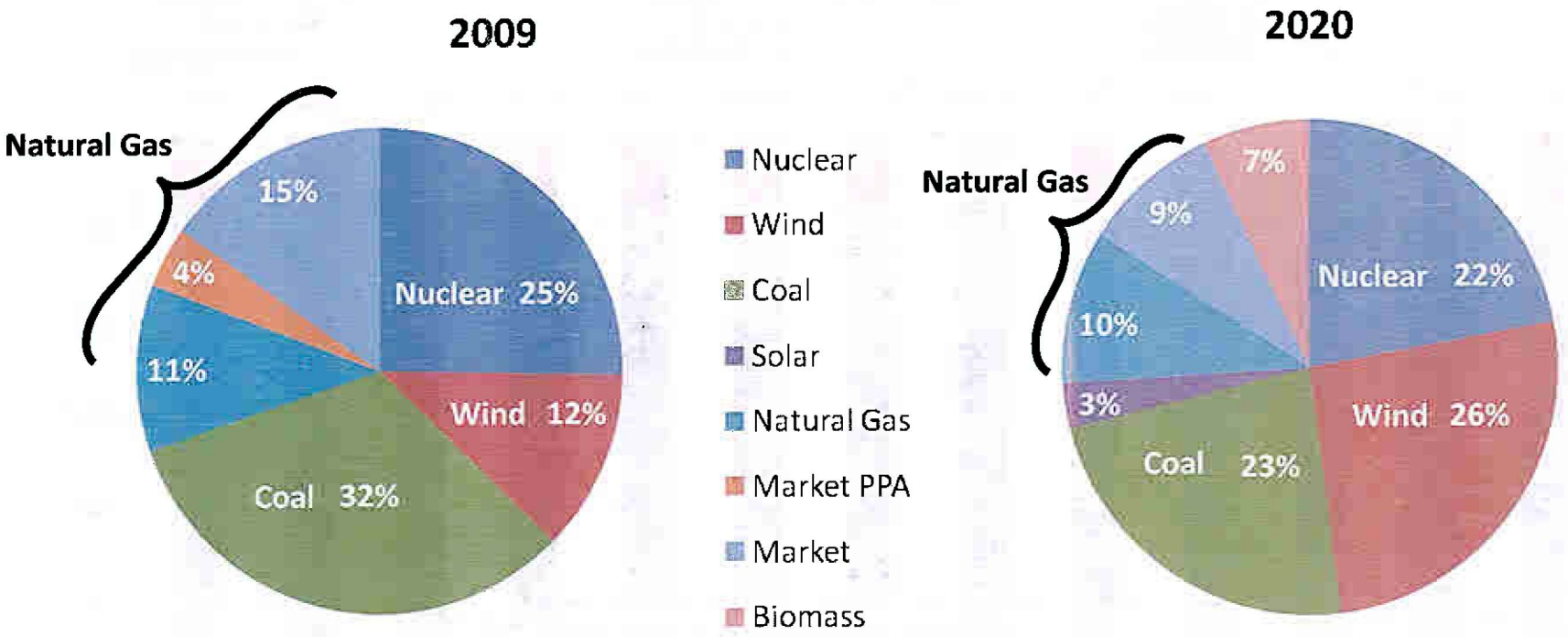
Austin Energy Recommendation

Generation Resources & Load Forecast



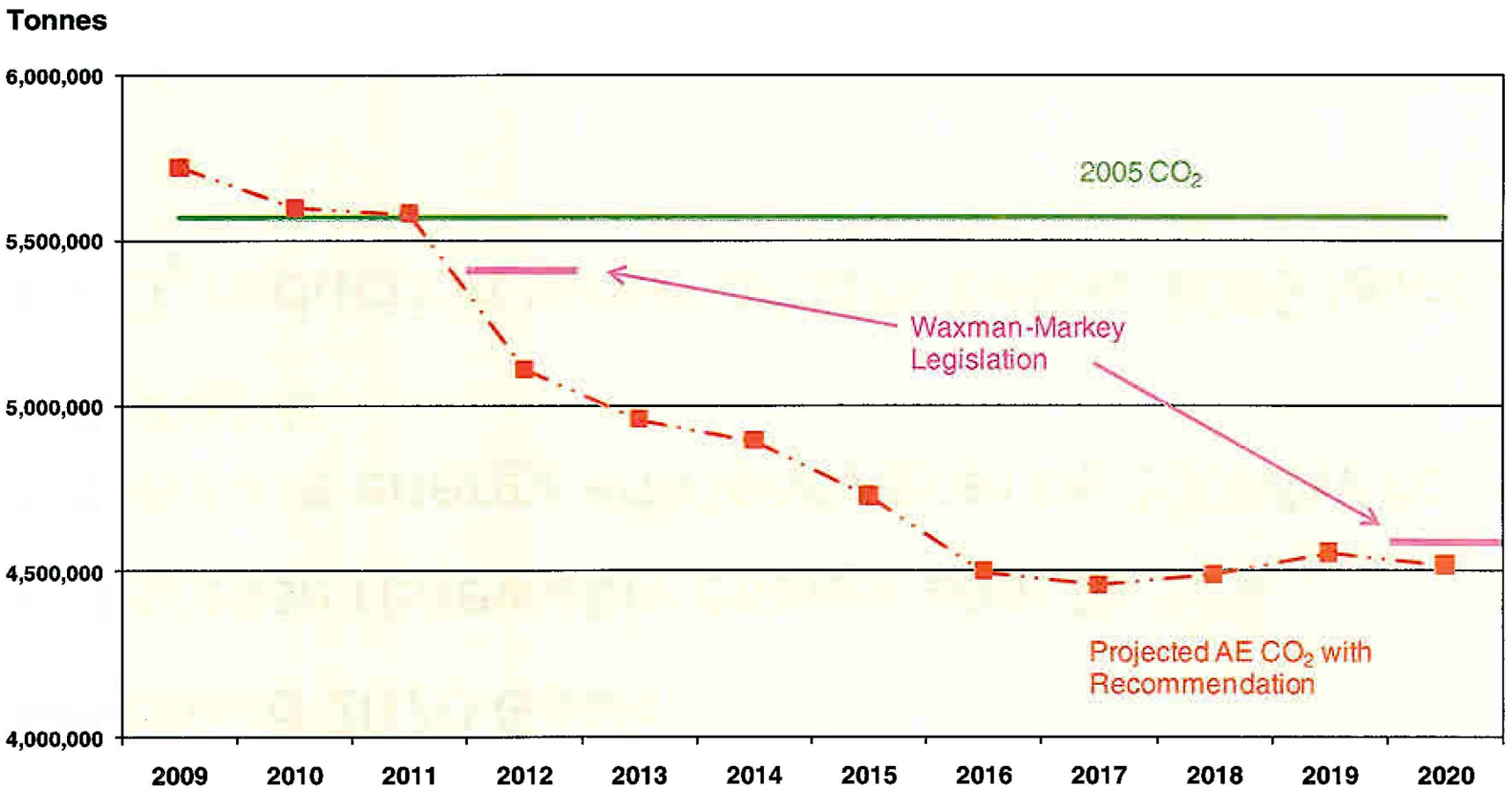
Austin Energy Recommendation

Energy Mix – 2009 vs. 2020



Austin Energy Recommendation

CO_2 Emissions



Austin Energy Recommendation

Goals Summary

Proposed 2020 Goals

- Increase renewable energy goal to 35%
- Increase energy efficiency goal by 100MW to 800MW
- CO_2 reduction target of 20% below 2005 level

Austin Energy Recommendation

Estimated Rate Impacts

- No rate impact for at least three years
- Estimated impacts associated with increased generation requirements, *in 2020*.

	Residential	General Service	Industrial
Demand/Energy Used	1,000 kWh	100 kW/ 43,800 kWh	5,000 kW/3,300,000 kWh
Increase over 2009	22.0%	19.2%	11.7%
Bill Impact	$21 ($0.02/kWh)	$717 ($0.016/kWh)	$24,684 ($0.007/kWh)

- Total capital expenditures to 2020 of $2.67 billion

Resource & Climate Protection Plan to 2020

PLAN COMPONENTS

Energy Efficiency
1st priority for meeting new load growth

- Increase 700 MW Goal by 2020 established in 2007 to 800 MW by 2020
- Continue building code changes for Zero Energy Capable Homes (ZECH) homes by 2015
- Conduct combined heat and power potential study
- Develop plan for distribution system efficiency improvements
- Implement innovative rate design changes for energy efficiency, including dynamic pricing
- Refocus on base load efficiency programs that reduce carbon
- Conduct new energy efficiency potential study
- Develop plan for local contractor, M/WBE contractor, and veterans opportunities
- Analyze impacts and opportunities resulting from Energy Conservation and Disclosure Ordinance

Wind

Increase wind capacity to 1,000 MW by 2020

- Seek ownership of wind resources
- Pursue compressed air energy storage
- Support increased transmission capacity in ERCOT
- Investigate other wind energy deployment and storage strategies

Solar

Double Solar goal to 200 MW by 2020

- Develop a portfolio approach to siting, financing and ownership
- Promote solar thermal hot water use
- Develop incentives and strategies for local manufacturing capacity
- Develop solar energy storage strategy
- Plan for development of full on-site solar energy potential in Austin

Biomass

Add 50 MW biomass capacity by 2020

- Study small facility options
- Continue to investigate biomass co-firing at Fayette Power Plant

Natural Gas

- Maintain current gas units of 1,544 MW
- Add 200 MW combined-cycle gas turbine (CCGT) at Sand Hill
  - Use reclaimed water for cooling new CCGT
  - Utilizes existing expansion option
- More efficient plant offers:
  - Fuel savings of approximately $130M by 2020
  - CO_2 reductions of approximately 1 million tonnes by 2020
- Dispatchability balances variable renewable and energy efficiency resources

Coal

Generation plan should reduce Fayette Power Plant capacity factor to 60% by 2020

- Sets stage for eventual modification, closure, or sale
- Continue to investigate co-firing at Fayette Power Plant
- Investigate further NO_x reductions and carbon capture and storage retrofits

Nuclear

- Continue participation in STP Units 1 and 2
- No participation in STP Units 3 and 4
- Evaluate nuclear power purchase agreements if offered

Geothermal & Other

- Investigate geothermal resource acquisition
- Assess non-solar renewable resources in service area

Complementary Strategies

- Energy Storage - Develop a comprehensive energy storage strategy
- Smart Grid & Pecan Street - Accelerate development and deployment of smart grid
- Electric Transportation - Continue development of electric vehicle incentives and utility integration for storage and other opportunities
- Economic Development - Develop and implement green collar job initiatives to grow and strengthen the local workforce

Resource & Climate Protection Plan to 2020

CLIMATE PROTECTION PLAN

January 28, 2010

Climate Protection Plan – "CO_2 Plan"

Reduce CO_2 emissions to 20% below 2005 level by 2020

- *Austin Energy Recommendation* is a plan that will reduce stack emissions under Austin Energy's control
- Austin Energy may be limited in its ability to reduce emissions at the power plants
- *Austin Energy Recommendation* may not be the lowest cost way to reduce CO_2 footprint

Direct Emissions Reductions

Austin Energy Recommendation is a plan that will reduce stack emissions under Austin Energy's control

- Energy efficiency and renewable resources reduce load of fossil fuel plants
- CCGT, 200 MW – Will displace less efficient generation resources (e.g., Decker) and provide balancing resources for renewable energy generation
- Expected to reduce Fayette Power Plant capacity factor to 60% by 2020—this is the intended result, setting the stage for closure, sale or modification
- Designed to accomplish a direct-emissions approach to compliance with likely federal regulatory requirements

Operational Considerations

Austin Energy may be limited in its ability to reduce emissions at the power plants

- LCRA options regarding Fayette Power Plant operations
- Both LCRA & ERCOT have a say in Fayette Power Plant closure
- ERCOT can dispatch any generator for grid reliability purposes

Financial Considerations of CO_2

Austin Energy Recommendation may not be the lowest cost way to reduce CO_2 footprint

- Ability to buy / sell CO_2 allowances or offsets
- Environmental dispatch vs. economic dispatch
- May forego off-system sale revenues, with uncertain environmental benefits
- New technologies (e.g., carbon capture and sequestration "CCS")

Water Consumption

Austin Energy Recommendation expected to reduce water use intensity from .72 gal/kWh in 2007 to .57 gal/kWh in 2020 (total consumption in 2020 of about 6 billion gal)

- Energy efficiency, solar PV, and wind require no water
- Biomass, geothermal, and solar thermal will require water
- Natural gas units are more efficient and use reclaimed water
- Reduced capacity factor at Fayette Power Plant reduces water consumption

Business Model

- Address deployment of distributed energy resources, especially self-generation
- Investigate "unbundled rate structure"
- Move from volumetric pricing to more fixed-cost pricing
- Address fuel portion of General Fund Transfer
- Develop plan for future GreenChoice® offerings
- Prepare for rate review in 2012

Resource & Climate Protection Plan to 2020

OTHER RECOMMENDATIONS

Resource and Climate Protection Plan Endorsement

- Austin Generation Resource Planning Task Force
  5-4 vote in favor of the following Resolution:

  Resolved, that the task force recommends to the City Council the adoption of the Austin Energy Staff Recommended Generation Plan as the generation plan for the utility, with the provision that Austin Energy review the plan in two years with the target of accelerating the phase down of Fayette plant and toward its eventual closure by 2020 if economically and technologically feasible.

- Electric Utility Commission
  5-1 vote in favor of the above Resolution

- Resource Management Commission
  4-0 vote in favor of the above Resolution

Strawman Summary

Baseline scenario

- Introduced to Council in July 2008 as a baseline scenario to meet Council goals
- Used to stimulate discussion during public participation process
- 30% renewable generation by 2020
- 20% reduction in coal use by 2020
- 6% reduction in CO_2 (from 2005 levels) by 2020
- 15% expected system-wide increase in cost of electricity by 2020 (based on Austin Energy analysis)

Task Force Scenario #1 Summary

Eliminate coal scenario

- 1 vote of support from Task Force
- 52% renewable generation in 2020
- Eliminate use of coal by 2014
- 61% reduction in CO_2
- 33% expected system-wide increase in cost of electricity by 2020 (based on Austin Energy analysis)

Issues of Concern

- High risks – greater exposure to market and more reliance on natural gas
- Uncertainty with assumptions to meet demand
  - 750 MW customer-owned solar PV at $1 watt cost to utility
  - 300 additional MW DSM

Task Force Scenario #2 Summary

Less capital-intensive scenario

- 3 votes of support from Task Force
- 30% renewable generation in 2020
- 15% reduction in coal use
- 14% reduction in CO_2
- 19% expected system-wide increase in cost of electricity by 2020 (based on Austin Energy analysis)

Issues of Concern:

- Less renewables, but only marginal cost savings
- Uncertainty with assumptions to meet demand
  - 266 MW customer-owned solar PV at $1 watt cost to utility
  - 300 additional MW DSM

Resource and Climate Protection Plan Summary

Austin Energy Recommendation

- Based on new information, analysis and public debate
- Supported by majority of Task Force and utility oversight committees
- 35% renewable generation by 2020
- Additional 100 MW of DSM and 100 MW solar
- 25% reduction in coal use (to 60% capacity factor at FPP)
- 20% reduction in CO_2 (from 2005 levels) by 2020
  - 22% reduction based on internal Austin Energy analysis
- 20% expected system-wide increase in cost of electricity by 2020
- More renewables than Strawman, better balances risks

Scenario Comparison

	Austin Energy Recommendation	Strawman	Task Force Scenario #1	Task Force Scenario #2
Cost (system-wide increase in electric bills by 2020)	20%	15%	33%	19%
Carbon Dioxide (reduction from 2005 levels by 2020)	20 % (based on AE analysis)	6% (based on Pace analysis)	61% (based on Pace analysis)	14% (based on Pace analysis)
Renewable Generation by 2020	35%	30%	52%	30%
Energy Efficiency by 2020	800 MW	700 MW	1000 MW	1000 MW
Solar by 2020	200 MW	100 MW	780 MW	296 MW

Austin Energy Response to Specific Additional Task Force Recommendations

- Austin Generation Resource Planning Task Force made 33 major recommendations (some recommendations had numerous sub-parts)
- Austin Energy recommends that City Council adopt 21 of the Task Force recommendations as written
- Austin Energy recommends that City Council adopt 12 of the Task Force recommendations only with specific modifications

Austin Energy Proposed Modifications to Task Force Recommendations

- Task Force Recommendation 1.a.

Austin Energy will increase its energy efficiency and conservation goal to 800 MW of total savings between 2007 and 2020. Austin Energy will conduct an energy efficiency potential study, and if warranted by the results of the study, will increase its energy efficiency goal to 1000 MW in savings over the same period.

- Task Force Recommendation 1.c.(ii)

Austin Energy will consider initiating a pilot project to measure and communicate to owners and tenants of rental properties the benefits of energy efficiency upgrades in rental housing, and the utilization of the results of the pilot to develop a program that will realize energy efficiency savings potential in both commercial and rental property, as warranted by the results of a comprehensive energy efficiency potential study.

Austin Energy Proposed Modifications to Task Force Recommendations

- Task Force Recommendation 2.a.

Austin Energy should attempt to substitute low- or zero-carbon emissions generation resources for carbon-emitting resources whenever such substitution is also consistent with the achievement of economic, financial, operational, reliability, and risk objectives.

- Task Force Recommendation 2.b.

Austin Energy will study and report on the potential for establishing a distributed renewable energy goal and an associated distributed renewable energy generation development program.

- Task Force Recommendation 2.b.(iv)

Austin *Energy will monitor and report on the development of the distributed renewable energy generation sector in Austin, including projects developed independently of Austin Energy program support.*

Austin Energy Proposed Modifications to Task Force Recommendations

- Task Force Recommendation 3.

Austin Energy will adopt an affordability goal for rates and services for all classes of customers.

- Task Force Recommendation 3.a.

Austin Energy will coordinate with its oversight commissions and other bodies designated by Council to periodically and publicly reassess its Resource and Climate Protection Plan to address: (i) performance against goals, (ii) an evaluation of operating expenses, capital expenses, and environmental compliance expenses, (iii) changes in legislation, technology, markets and economic conditions, and (iv) whether any goals contained in the plan should be changed.

Austin Energy Proposed Modifications to Task Force Recommendations

- Task Force Recommendation 3.b.

Public reassessment of the Resource and Climate Protection Plan should be consistent with sound and efficient management and oversight, and should, to the extent practicable, include . . .[Austin Energy proposes that Council adopt the balance of Task Force Recommendation 3.b.]

- Task Force Recommendation 3.c.

As the Resource and Climate Protection Plan is executed, Austin Energy will publish the anticipated impact of every proposed major resource acquisition or contract execution.

Austin Energy Proposed Modifications to Task Force Recommendations

- Task Force Recommendation 7.a.

Prior to taking action to acquire a resource of a capacity of 10 or more megawatts under the Resource and Climate Protection Plan (whether by purchase agreement or direct investment) Austin Energy will, to the extent practicable and consistent with sound management and financial responsibility, present such action for approval at least once to each applicable commission and twice to City Council.

- Task Force Recommendation 7.c.

Austin Energy will periodically publish such objectively reliable and valid comparison data on its residential, commercial and industrial rates as can be reasonably obtained.

- Task Force Recommendation 7.d.

Austin Energy will annually publish a summation of the cost categories of the fuel charge.